Errata – 2008 Introduction to Molecular Thermodynamics (revised 5/5/2011 bh/sg)

first printing:

p. 38 formula after “or” on a line by itself should read:

\[ n_1 = n_0 x, \quad n_2 = n_0 x_2, \quad n_3 = n_0 x_3, \quad \text{etc.} \]

p. 43 in problem 2.24 \( \Delta \varepsilon_{ij} = 8.0 \times 10^{-25} \text{ J} \), \( \Delta \varepsilon_{ij} = 8.0 \times 10^{-21} \text{ J} \)

p. 45 graphic. Some lines of Cl\(_2\) graph are missing.

p. 70 Figure 3.18 top line above “pumping” should read 1s\(^1\)2s\(^1\), not 1s\(^2\)2s\(^1\)

p. 73 Problem 3.7 should refer to \( \varepsilon_{1,2} \) not \( \varepsilon_{0,1} \)

p.73 in problem 3.15 for \( k_f = 408 \text{ kg/s}^2 \) not 290 kg/s\(^2\)

p 109 5.7 (a), (b), (c) should all read “+ CH\(_3\)” rather than “+ CH\(_4\)”

p 156 Problem 8.6. Strike (d) based on mole fraction

p 169 Problem 9.9(a) equation should read \( \text{N}_2\text{H}_4(l) + 3 \text{ O}_2(g) \rightarrow 2 \text{ NO}_2(g) + 2 \text{ H}_2\text{O}(g) \)

p 169 Problem 9.14(c) C\(_2\)H\(_5\)NO\(_2\) is not specific enough. It should read CH\(_3\)CH\(_2\)NO\(_2\)

p 188 Problems 10.12 and 10.13 should be recast:

10.12 Using data from Appendix D, make a table showing \( T(K), q(J), q_{\text{sur}}(J), \Delta S(J/K), \Delta S_{\text{sur}}(J/K), \) and \( \Delta S_{\text{universe}} \) for the conversion of one mole of solid \( \text{I}_2 \) to one mole of gaseous \( \text{I}_2 \) at the following temperatures: (a) 25 \( ^\circ \text{C} \), (b) 125 \( ^\circ \text{C} \), (c) 159 \( ^\circ \text{C} \), (d) 175 \( ^\circ \text{C} \).

10.13 Assuming that freezing one mole of liquid methanol releases 2.196 kJ of energy and lowers the entropy of the system by 12.5 J/K at all temperatures (an approximation), make a table showing \( T(K), q(J), q_{\text{sur}}(J), \Delta S(J/K), \Delta S_{\text{sur}}(J/K), \) and \( \Delta S_{\text{universe}} \) for the melting of 1.0 g of solid methanol at the following temperatures: (a) -125 \( ^\circ \text{C} \), (b) -95 \( ^\circ \text{C} \), (c) -50 \( ^\circ \text{C} \), (d) 0 \( ^\circ \text{C} \). Explain how your values for \( \Delta S_{\text{universe}} \) agree with the fact that the melting point of methane is -98 \( ^\circ \text{C} \).

p 188 Problem 10.18 Insert “(c)” prior to “Which explains best…”; in last sentence change “disorder” to “constraints”

p 201 space character missing between “2” and “NH\(_3\)” in first chemical equation.

p. 209 11.10 last line in table should read \( 1.39 \times 10^{-3} \)
p. 228 in heading “Application: Raoult’s Law, \( P = \chi_{H_2O}P^\circ \)” the “naught” isn’t a degree symbol

p. 232 in problem 12.50 in the reaction \( H_2O(s) \to H_2O(l) \), the second O is a zero.

p 240 Figure 13.9. 2\(^{nd}\) arrow from left, from b up to line 3, should be reversed, pointing up, not down.

p 282 missing data: \( \text{HNO}_3(l) \)

<table>
<thead>
<tr>
<th></th>
<th>-173.23</th>
<th>155.60</th>
<th>-79.91</th>
</tr>
</thead>
</table>

p 287 answer 1.17(b) should be 0.25, not 4.00

p. 288 \textbf{3.26} answer should be \( 4.06 \times 10^{-40} \) J

p. 288 \textbf{4.4(d)} answer should be 244 K

p 289 answer 6.9 answers (b) and (c) should be switched

p. 289 \textbf{8.13(c)} answer should be 661 J/K

p 290 answer 9.5(a) should read 1.047 kJ

p 290 answer 9.9(a) should read -467.91 kJ/mol (c) should read +397.32 kJ, not -397.32

p 290 11.1 strike “-4803 J” and “-67411 J”

p. 291 \textbf{12.35} very last formula should be (s) not (g)

p. 292 continuation of answer to problem \textbf{12.35}, 370 K 316 K, …

p 292 Problem 13.18(c) should read 1.001 V, -400 kJ, \( 2.3 \times 10^{70} \).

\textbf{Second Printing (5/2011)}

(no errata identified)